WHAT IS CLAIMED IS:

1.    An information processing method of dividing a feature space in which a point set given as learning patterns is present to form a classification tree on the basis of the learning patterns, comprising:

the linear combination feature amount generation step of generating a new feature amount by a linear combination of the feature amounts of the learning patterns;

the hierarchization pre-preprocessing step of hierarchizing, in advance, the new feature amount generated in the linear combination feature amount generation step; and

the classification tree generation step of generating a classification tree on the basis of the learning patterns hierarchized in the hierarchization pre-processing step.

2.    The method according to claim 1, wherein in the linear combination feature amount generation step, a coefficient of the linear combination is selected from a fixed set of coefficients.

3.    The method according to claim 1, wherein in the hierarchization pre-processing step, the feature amount is hierarchized on the basis of a normal vector of the hyperplane formed by the linear combination in the linear combination feature amount generation step and a hyperplane having the normal vector.

4.    The method according to claim 3, wherein the hyperplane used in the hierarchization pre-processing step includes a hyperplane perpendicular to the feature amount axis.

5.    The method according to claim 1, wherein

in the hierarchization pre-processing step, a hierarchical structure is formed such that the structure is hierarchized for each feature amount, and

in the classification tree formation step, a classification efficiency is calculated from a hierarchical structure of each feature amount at each node, a feature amount used on the basis of the classification efficiency is determined, and a classification tree is formed.

6.    The method according to claim 1, further comprising the recognition step of recognizing a newly input pattern using the classification tree formed in the classification tree formation step.

7.    The method according to claim 1, wherein in the hierarchization pre-processing step, the feature amount is hierarchized on the basis of a range of values which can be taken by the learning patterns.

8.    The method according to claim 1, wherein in the hierarchization pre-processing step, the feature amount is hierarchized on the basis of a profile of the learning patterns.

9.    The method according to claim 1, wherein the

learning pattern is any one of an image pattern, a
speech pattern, and a character pattern.

10.    An information processing apparatus for dividing
a feature space in which a point set given as learning
patterns is present to form a classification tree on
the basis of the learning patterns, comprising:

linear combination feature amount generation
means for generating a new feature amount by a linear
combination of the feature amounts of the learning
patterns;

hierarchization pre-preprocessing means for
hierarchizing, in advance, the new feature amount
generated by said linear combination feature amount
generation means; and

classification tree generation means for
generating a classification tree on the basis of the
learning patterns hierarchized by said hierarchization
pre-processing means.

11.    A program for dividing a feature space in which a
point set given as learning patterns is present to form
a classification tree on the basis of the learning
patterns, the program causing a computer to function
as:

linear combination feature amount generation
means for generating a new feature amount by a linear
combination of the feature amounts of the learning
patterns;

hierarchization pre-preprocessing means for hierarchizing, in advance, the new feature amount generated by the linear combination feature amount generation means; and

5        classification tree generation means for generating a classification tree on the basis of the learning patterns hierarchized by the hierarchization pre-processing means.